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Will There Be Reconversion in Science?

For several years a large percentage of American scientists have had to discontinue or at least radically depart from their usual work. Now they are returning to their laboratories and lecture rooms. Will they take up precisely their former duties and carry them on in the old way? Will there be a general "reconversion" in science?

The answer to these questions will vary from scientist to scientist, but in general it will be in the negative for the reason that the world itself has changed. Horizons have greatly expanded, human relations have become more complex, and dangers appear to menace civilization. Scientists are peculiarly sensitive to these conditions because their work, directly or indirectly, has brought them about.

This is by no means the first time that science has turned a page of human history. For example, four hundred years ago Copernicus and Galileo, by proving that the earth revolves around the sun, transferred man from his proud place at the center of the universe to the surface of a wandering bit of matter and profoundly affected his ideas of the cosmos. A little less than a century ago the publication of Charles Darwin's *Origin of Species* and the *Descent of Man* produced an equally great revolution in human understanding, not of the nature and properties of the inanimate universe but of the characteristics of, and the relations among, the myriad forms of life, including man, that have flourished on the earth.

Now science is opening still wider horizons, enriching human lives, and posing new and more difficult problems. At the moment attention is

focused on the atomic bomb and some of its immediate consequences. The devastating energy it releases overwhelms the imagination. Yet it compares feebly with the eruptive prominences astronomers frequently observe on the sun, and with the vastly more violent explosions in some of the stars. These phenomena have given rise to speculations about a possible explosion of the sun and the complete destruction of this little earth.

The atomic bomb, however, presents a more immediate threat than the explosion of the sun. Daily papers and magazines have carried numerous articles about, and photographs of, the devastation produced at Los Alamos, New Mexico, and the greater destruction, with enormous loss of life, at Hiroshima and Nagasaki in Japan. Any tendency to elation at the destruction of the cities and lives of those who were our enemies is promptly tempered by the dread thought that sometime, perhaps within a few years, our own cities and citizens may be similarly destroyed. The admission of scientists that they know of no present defense against atomic bombs, and can conceive of no method of devising one that will be effective, weakens confidence in the future of civilization itself. There are even fears that the human race may destroy itself, as thousands of other species of animals which once flourished on the earth have at least become extinct.

Two possible methods of escape from disaster for this country have been proposed. One is that our Government keep secret the processes of producing atomic bombs. But those who made the bombs so far used promptly assure us that scientists of other nations can develop the same or equivalent processes within a few years. The other is that there be adopted some sort of international agreement, at least among the great powers, to control the atomic bomb and possibly other methods of releasing atomic energy for the benefit of mankind.

But the great powers do not appear at the moment to trust one another sufficiently to make such agreements achievable. Consequently, humanity drifts on possibly toward ultimate disaster. It is true that legislation is pending be-

fore Congress which is intended to prepare this country for any eventualities. It is of two kinds, scientific training of young men to produce means of defense and offense and also direct military training in the use of such means. The original bills provided unparalleled support for education in the fields of the physical sciences and medicine, without any explicit recognition of the biological and social sciences until the Association made representations in their behalf on the ground that the future of our country will probably not be concerned entirely or even primarily with war. Such are some of the consequences of the explosion of three atomic bombs, each of which probably weighed not more than a five-inch artillery projectile.

As a matter of fact, the atomic bomb has given rise to no essentially new problem in human relations; it simply brings to a climax a situation which has been developing with ever-increasing speed throughout the history of science. The fact can be illustrated very simply: It has often been remarked that by developing easy means of communication and travel science has made all civilized men virtually neighbors. In the long run the effects of the human contacts made readily available in these ways will certainly be important. But there are simpler and speedier consequences of technology, such as the tremendous efficiencies of mass transportation and the mass production of manufactured products. An obvious consequence of these methods is a great decrease in the human labor necessary to live and a great increase in the available necessities and luxuries of life. But a more important social consequence is that mass production requires precise coordination of the labor of many persons in interrelated tasks under the guidance of competent leaders and with the support of large financial resources. Technology is forcing an evolution of human relations on a relative high plane of understanding and co-operation. We may hope that the present unrest and considerable turmoil are only the growing pains of an evolving better pattern of society.

Science and its applications, independently of the recent work on atomic energy, make necessary international cooperation on a vast scale. For example, no country has all the raw materials necessary for a highly developed technology. Even in this country, with all its vast natural resources, there were serious shortages of many materials during the war. The only alternative to international cooperation is the building up of stock piles in times when international com-

merce is possible. This at best is only a partial solution that does not decrease international rivalries and frictions. In fact, the need for access to raw materials has been given as the excuse for aggression and war.

Suddenly the atomic bomb appears. It is forcing decisions respecting international relations that otherwise might drag along for generations with continually recurring and more dreadful wars. It demands an immediate answer to the question whether human beings will live in peace on a world scale or rush headlong toward the probable destruction of civilization and possibly of the human race. These appear to be the alternatives. If the former is chosen, the development of the atomic bomb will always be regarded as perhaps the most important event in human history; if the latter is chosen, a great step toward the suicide of civilization will have been taken.

In such a grave period in human history will there be a reconversion of science in the sense that the term was used in the beginning? Evidently not! Scientists during the war have grown from the stature of specialists, perhaps eminent in their own fields, to the greater stature of those whose horizons include all of humanity, forgiving human weaknesses, regretting human failures, and drawing confidence from human successes that a glorious future may be achieved. This is the attitude and the earnest hope of those who made the atomic bomb. May their high purposes be communicated to their fellow scientists, and through them to all men by a sort of chain reaction, roughly analogous to that involved in the release of atomic energy, to the end that the world may be filled with light without destruction!—F. R. M.

Government Support of Scientific Research

The current interest which the Congress is displaying in American science and scientific research has inevitably aroused a reciprocal interest among American scientists. The press has chosen to feature the atomic bomb and its potentialities for good or ill, but congressional interest is by no means limited to this one extraordinary achievement of scientific endeavor. Indeed, only one of the problems of science seems to have escaped congressional attention, and that one is of crucial importance—namely, the alarming shortage of students and professional scientific personnel. But our congressmen are interested in basic and applied research in every field; they are concerned about the publication

and dissemination of the results of research; they have given some attention to the problem of international cooperation in scientific endeavors; they have shown some inclination to support advanced students in our colleges and universities by means of scholarships and fellowships. When the legislative branch of our government enters the field of science to this extent, it is essential that scientists, in return, should concern themselves with legislative procedures, if only to make certain that any laws which may be passed affecting their activities will be basically sound.

In this spirit the Permanent Secretary's Office has endeavored to learn all it could about pending science legislation and to pass on this information to members of the Association. It has also endeavored to obtain representative opinions from scientists in every field, and to this end questionnaires covering the chief points involved in the proposed legislation were sent to every member of the Council, and through the courtesy of Senator Kilgore a pamphlet entitled "Legislative Proposals for the Promotion of Science" was also distributed to the members of the Council to inform them in greater detail regarding the provisions of the several bills. Likewise, a brief analysis of the several bills was published in the October 26 issue of *Science*.

The questionnaires and pamphlets were sent out during the latter part of September, and 162 replies were received in time for use at the Senate hearings which were held during the entire month of October. Some of the questionnaires received represented group opinions, for some of the members of the Council discussed the questions with colleagues in the institutions with which they are connected, and three of them attempted the ambitious task—with notable success—of canvassing the entire memberships of the societies which they represent. The replies received thus represent the opinions of 500 to 600 scientists, and it was believed that this was an adequate and sufficiently representative sample of opinion to warrant presentation of the results to the Senate subcommittees which conducted the October hearings.

On October 9, at the invitation of Senator Kilgore, the Association was represented at the joint Senate hearings by President Charles F. Kettering, Permanent Secretary F. R. Moulton, and Executive Secretary Howard A. Meyerhoff. Among the items submitted for the record were the quantitative results obtained through the questionnaire from the members of the Council.

It is not possible to give the details of the survey in this brief article, but the general reaction can be briefly stated: Over 90 percent of those replying favored government support of research. The actual figures are significant and will be given:

- 91% favored support of military research
- 90% favored research in medicine and public health
- 80% favored research in the physical and biological sciences
- 67% favored research in the social sciences
- 44% favored research in applied fields not fully covered by private organizations

In regard to the expenditure of research funds, 86 percent of those replying believe that some of the money should be spent to further projects sponsored by existing government laboratories, and 70 percent believe that some of the funds should be spent in the non-profit research foundations and educational institutions. The conviction that the quality of available research facilities and personnel in any government or institutional laboratory should govern the granting of funds for research projects was almost unanimous. There was also general support for a plan of scholarships and fellowships. Opinions varied somewhat more widely on other subjects, and it was quite obvious that most of the people who replied attached less importance to such moot subjects as patents than either of the Senate subcommittees which sponsored the joint hearings. It seems reasonable to state that, whereas most of the testimony submitted at the hearings represented the opinions of individuals or of small groups, the testimony offered by the Association, as well as by representatives of the biological and social sciences, gave the Senate subcommittees much more accurate cross-sections of opinion.

The hearings left a residue of problems and brought into relief three basic differences of opinion. First in importance is the administration of the proposed National Research Foundation or National Science Foundations, depending upon which of the two names is finally selected. The Magnuson Bill (S1285) proposes to vest the powers of administration in a board of nine members, serving part time and without compensation, the members to be appointed by the President on the basis of demonstrated capacity for the work to be done. The terms of this Bill provide that this Board shall be empowered

to appoint a Director, who shall be directly responsible to the Board. The Kilgore Bill (S1297) provides that the powers of administration shall be vested in a Director appointed by the President. There is also provision for a Board to serve the Director in an advisory capacity; and current revision of the Kilgore Bill makes further provision for separate boards and assistants or subdirectors, to administer the affairs of the five subdivisions which each of the bills creates.

It is not surprising that scientists, for the most part, favor the appointment of a Board composed of capable scientists to direct the program of basic research, which is one of the fundamental purposes of the bill. On the other hand it would be presumptuous of scientists to contend that such a board would have the qualifications to administer a program of research dealing with national defense or with public health. It must also be questioned whether the administration of so large a program, involving the expenditure of very large sums, can reasonably or wisely be placed in the hands of nine men who, however competent, are asked to devote only part of their time to the job, and that part without remuneration. The responsibilities which are being delegated to the National Research Foundation are far too great for part-time administration, and it can hardly be expected that the Congress will thus distribute the responsibility for the expenditure of substantial appropriations. In view of the overwhelming support which American scientists have given to the general principle of government support for research in National Defense, in medicine and public health, and in the basic sciences, it would be unfortunate if too great an issue were made of the matter of administration, and particularly if undue support were given to a method of administration which is obviously inappropriate for a multi-purpose project.

Although two-thirds of the Council members who replied to the questionnaire favored the inclusion of the social and economic sciences in the legislation, there is a sharp difference of opinion on this point, as was evident at some of the hearings, in which it was advocated that the social sciences be excluded. Once again it must be suspected that adverse opinions are based upon too narrow a view of scientific research. It is difficult to visualize a program of research on public health that gives no consideration to social factors, or to a project involving natural resources which does not take into account economic fac-

tors. Illustrations can readily be multiplied, but the important point is that no program in as broad a field as is covered by the proposed legislation should be artificially restricted by statute. Neither the public nor the Congress would view sympathetically any legislation which precluded the scientific study of human problems.

At the present time the science bills are still in Committee. According to the information which has reached the office of the Association, the Kilgore Bill (S1297) has undergone complete revision and is ready for consideration in executive session. It is hoped that one bill or another will be reported out of Committee and will come before the Senate before the close of the calendar year. No particular schedule has been set, but there is obviously time for scientists to give further consideration to the pending legislation and to take such steps as they may deem desirable to make their opinions known.—H. A. M.

The Building Fund

It was planned to make a report in this issue of the *Bulletin* on the progress in obtaining funds for a permanent home for the Association. The burden of handling nearly 20,000 checks in payment of dues since about the end of the first week in October and of making a very large number of changes of address, in addition to caring for contributions to the building fund, preparing for the meeting of the Association in St. Louis next March 27-30, and securing office space for editing *Science* and the advertising staff have made it necessary to defer the report until next month.

In the November issue of the *Bulletin* there was a brief statement that a committee had been formed in Philadelphia to invite the Association to choose that city as the place for its permanent home. It was reported that the invitation to the Association had been participated in by the mayor of the city and representatives of sixteen scientific, educational, and cultural organizations. After the report was in print similar invitations were received from Temple University, The Philadelphia Section of the American Chemical Society, and the Rockefeller Institute for Medical Research. These invitations, too, are greatly appreciated, for they express not only good will toward the Association but confidence that it will continue to be an important factor in the advancement of American science.

During the past month two other invitations have been received by the Association to establish its permanent home in cities other than Washington. One was from San Diego, California, and

the other from New Haven, Connecticut. The latter was from Dr. Edmund W. Sinnott, Director of the Osborn Botanical Laboratory of Yale University, whose cordial invitation to the Association and proposal to cooperate with it in establishing its permanent home in New Haven was written after consultation with the administrative officers of the University. Such letters are most refreshing to the executive officers of the Association who have carried on during the past few years under almost unbearable limitations of office space and office personnel.

Meeting of the Institute of Radio Engineers

The cessation of hostilities has released a flood of scientific activities, and many organizations besides the Association are planning early meetings. One of those which has made an early announcement of plans is the Institute of Radio Engineers. Meeting in New York at the Astor Hotel, January 23 to 26, 1946, they have already announced papers on subjects which have been enshrouded in necessary military secrecy.

A. E. Harrison, chairman in charge of technical sessions, has announced papers in broadcasting, frequency modulation and television; navigational aids; communications and relay links; radar; industrial electronics; testing equipment; microwave measuring devices; antennas and radio wave propagation, and many other new devices and developments. Other features of the meeting will include the award of the Institute Medal of Honor for distinguished service in radio communication, the award of the Morris Liebmann Memorial Prize, and a commercial exhibit in which 150 firms, or more, will participate.

As announced, the program sounds two significant postwar notes: Rapid conversion to peacetime commercial pursuits and the dissemination of new knowledge acquired in the course of wartime activities.

Membership of the Association

No other statistics about a scientific organization are so significant as the number of its members and the changes in its membership. On its membership depend its income for operating expenses, the circulation of its journals, the size of its meetings, its contributions to the advancement of science, and its influence upon society in general. The changes in its membership indicate whether scientists regard it as fulfilling its purposes and they form a basis for forecasting its near future.

The accompanying graph summarizes the membership and the changes in membership of the Association for the past ten years. Although scientists have been under heavy pressures from the war, and although the Association has cancelled most of its meetings, still its membership has increased steadily and fairly rapidly.

The membership year of the Association ends on September 30 and all membership data, unless otherwise stated, are as of that date. The fiscal year of the Association, however, is the calendar year, and subscriptions for the Association's journals are also for the calendar year, partly because each of them begins a new volume with its first issue in January.

As of last September 30, the total membership of the Association was 27,176; a year earlier it was 25,488, a net gain of 1,688 during the past year of the war. The net gain in the preceding year was 761. The *net* gain is emphasized because there are losses from deaths, resignations, and failures to pay dues, a total of 1,282 the past year and 1,483 the previous year. There were 2,926 new members in the past year and 44 reinstatements of members who had allowed their memberships to lapse temporarily.

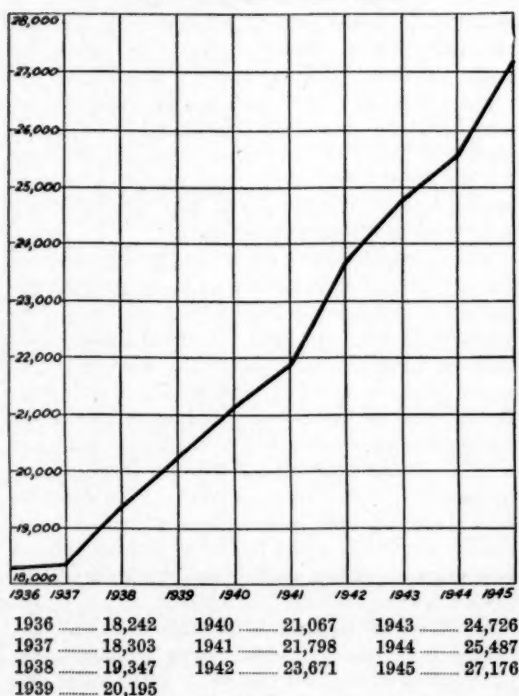
Only twice before in the 97 years since the Association was founded were so many persons admitted to membership in one year, and those two years were 1929 and 1942. Not until after 1900 was the total membership of the Association as great as the number of new members last year. A fact of even greater significance is that never since detailed membership records were kept has a membership year closed with so large a percentage (95.15) of all dues paid. This promptness is not only evidence of interest in the Association but it has saved the labor and expense of rebilling at a time when help and space for operations have been wholly inadequate.

It would be natural to assume that unusual efforts were made to secure new members last year, but such was not the case. The limitations imposed by the War Production Board on the use of paper for publishing *Science* and *The Scientific Monthly* deterred the officers from attempts to add greatly to the membership of the Association. Why, then, did the membership increase so greatly? There were various reasons. In the first place, the acceptance of invitations to become members was more than 60 percent higher than in the preceding year. More than 500 persons became members of the Association by direct application, on nominations of members, and as a consequence of correspondence with the office of the Association on a great variety of subjects.

Nearly 300 persons became members last year as a consequence of correspondence with the office of the Association during the preceding year. More than 80 persons became members last year to whom application cards were sent in 1941, 1942, and 1943. In fact, one application dated 1927 was returned with initial membership dues by a man who had kept it 18 years. Such straws in the wind as the foregoing indicate the currents that are flowing and accent the acute and rapidly increasing need of the Association for an adequate home of its own.

The average duration of all the memberships which terminated last year by death or otherwise was 10.75 years.

TOTAL MEMBERSHIP—TEN YEARS



At this date (Nov. 27) less than two months of the membership year, which began on October 1, have elapsed. In this interval 1208 new members have been added to the membership roll of the Association. In the corresponding interval a year ago a somewhat larger number of persons had been admitted to membership, a fact that emphasizes the importance of continued nominations by members to make up for the decreased circularization from the office of the Association because it was not anticipated the war would terminate so soon.

Earth Science Meetings

After a long hiatus in their schedules of annual meetings, the geographers have arranged to meet at the University of Tennessee in Knoxville, and the geologists will gather at Pittsburgh. Both groups will meet on the same dates, December 27 to 29, inclusive.

At Knoxville joint or simultaneous programs are being arranged by the Association of American Geographers and the American Society for Professional Geographers. At Pittsburgh the Geological Society of America, the Society of Economic Geologists, the Mineralogical Society of America, the Paleontological Society, and the Society of Vertebrate Paleontologists are the participating organizations. For the Geological Society of America this annual meeting will be the fifty-eighth.

The United Nations Cultural Charter

Representatives of forty-four countries met in London, England, from November 1 to November 16 for the purpose of establishing an "Educational, Scientific and Cultural Organization" of the United Nations. They adopted a constitution for the proposed organization without a dissenting vote. The United States, Canada, Mexico, and all except two of the South American countries were represented at the Conference, as well as most of the other principal countries of the world. Among those not represented were Russia, Italy, Spain, and Portugal.

Originally the word *Scientific* was not in the title of the proposed organization. This omission was discussed at a meeting held in Washington on September 21 under the auspices of the American Council on Education, at which it was pointed out that close international relations among scientists have long existed and will be easy to continue. Consequently, it is not of much consequence whether or not science is explicitly recognized as being within the scope of the Organization. The real problem is to establish relations among the various peoples of the world on such a broad scale that the understanding and mutual respect they will acquire by their contacts will be a potent influence in preserving international peace.

The constitution of the Organization provides that all countries who are members of the United Nations Organization set up at the San Francisco Conference last April shall be members of the new cultural organization. It provides procedure also for the admission of other countries. Members expelled from the United Nations Organiza-

tion automatically cease to be members of the cultural organization. Consequently the new organization is tied into formal governmental activities to an extent that will make it impossible to keep it wholly free from political considerations and influences. Yet in its formal procedures each member state will have one vote regardless of its population and political and economic importance. Except in cases in which the constitution of the cultural organization requires a two-thirds majority vote for valid action, decisions require only a majority vote of the members present and voting. In these matters the more powerful countries will have no advantages over the smaller ones.

The stated purposes of the cultural organization are largely on a rather high intellectual level. For example, among its functions are the protecting of world-inheritance of books, works of art and monuments of history and science, recommending international conventions, international exchange of educators, scientists, and other scholars and the exchange of publications. All of these things have been done to a considerable extent for many years and they should be continued. Presumably these activities under the auspices of the new organization will be financed by the respective governments. Obviously they will not be spontaneous expressions of the desires of the various peoples of the world to become cooperating neighbors. Yet as far as they go they will probably increase international friendships.

One cannot but wonder whether there is not something else closer to the level of the common man which is feasible and which might be more effective. In this country there has been within a few generations the greatest intermingling of peoples with various cultures and of several races in the history of mankind. A remarkable degree of understanding and mutual respect among all these peoples and races has been achieved in two principal ways: in the hard struggles to make a living in cooperation and often in competition and in the public schools. In the rough and tumble of the lives of the common people in a pioneer environment differences in ancestry and language are of little importance. Such conditions cannot now be duplicated on an international scale, but the public schools of the various countries might build up among their students lively and extensive international correspondence. Instead of discussing political questions they might describe their work in school and at home, their sports and games, their holidays, and all the common things of their every-day lives. Some

such things were done on a limited scale among the allies immediately after the first World War. Should not children from their school days participate in the greatest task before mankind, that of developing mutual understanding and good will among all the peoples of the earth?

American Society of Agronomy

The idea for the organization of the American Society of Agronomy apparently originated with the Agronomic Seminar of the United States Department of Agriculture. The committee appointed for the purpose of forming an American Society of Agronomy contacted workers in the field of agronomy throughout the United States during the fall of 1907. As a result of the activities of this committee and of state workers, a meeting was held in Chicago on December 31, 1907, at which time the American Society of Agronomy was organized.

The object of the Society is to increase and disseminate knowledge concerning soils and crops and the conditions affecting them. Membership is open to all individuals interested in these objectives. The objectives are carried out, first, through holding an annual meeting; and, second, through the publication of the Journal.

The Society continued along the lines of the original organization until November 18, 1936, when the members of the Society having specific interest in the fields of soils and closely related work organized the Soil Science Society of America. This organization represented a merging of the American Soil Survey Association and the Soils Section of the American Society of Agronomy. The object of the new organization is to foster all phases of soil science, and any person interested in the object of the Society is eligible for membership. The Soil Science Society also functions as the Soils Section of the American Society of Agronomy.

The Soil Science Society of America is organized in six fields in order to provide an opportunity for the consideration of specialized subjects. The six fields are Soil Physics; Soil Chemistry; Soil Microbiology; Soil Fertility; Soil Genesis, Morphology and Cartography; and Soil Technology, including Soil Conservation.

The Crops Section of the American Society of Agronomy is organized on the basis of subject matter. The divisions consist of Genetics, Cytology, Physiology, Taxonomy, Crop Production, Crop Improvement, Experimental Methods, and such others as may be deemed advisable. The program of the annual meetings frequently provides sessions on extension and resident teaching.

The Journal of the American Society of Agronomy publishes acceptable papers presented by members of the Society directly to the editor, and papers presented at the annual meetings which the author wishes to publish and which are accepted by the Editorial Committee. Throughout the years there has been a good balance between the number of articles published in the Journal from each of the fields, soils and crops. The Journal is recognized as the outstanding agronomy publication of the world. It has increased in size and importance with the growth of the Society. The first volume contained 238 pages and 39 papers, while Volume 34 of the Journal published in 1942 contained 1181 pages and 119 papers.

The papers presented at the meetings of the Soil Science Society of America are published in the Proceedings of that Society. Soils men who are members of the American Society of Agronomy are also privileged to submit papers for publication in the Journal at any time.

The American Society of Agronomy, which had a membership of only 101 at the time it was organized, had, at the time of the 1942 meetings, a total membership of 1153 representing each state in the Union and many foreign countries.

The annual dues of the American Society of Agronomy are \$5.00, including a subscription for the Journal. The dues for joint membership in the American Society of Agronomy and the Soil Science Society of America are \$9.00, including a subscription for the Journal of the American Society of Agronomy and the Proceedings of the Soil Science Society.

The Society sponsors a student section of the American Society of Agronomy and awards prizes to the winners of the essay contest conducted by the Society. It recognizes men who have made outstanding contributions to the science of agronomy by electing them fellows.

The Society holds one national meeting each year and, in addition, sectional meetings throughout the country. The 1944 meeting was cancelled because of the war. Since cessation of hostilities plans have been made to hold a meeting at Columbus, Ohio, February 27 to March 1, 1946.

The Society contributed to the war effort through the activities of committees studying such factors as fertilizer needs, fertilizer applications, methods of substituting organic materials for commercial nitrogen, more economical methods of crop production and studies on seed supplies.

G. G. POHLMAN, *Secretary-Treasurer*.

Membership in the Association

Eligibility for Membership

Membership in the Association is open to all persons engaged in scientific work, whether in the fields of the natural or the social sciences; to all amateur scientists, whatever their special interests; and to all who desire to follow the advances of science and its effects upon civilization. Members having made substantial contributions to the advancement of science are eligible for election as fellows.

Dues and Publications

Membership dues are \$5 per year, including subscriptions for the monthly A.A.A.S. BULLETIN and either the weekly journal *Science*, now in its 101st volume, or *The Scientific Monthly*, now in its 60th volume. *Science* is a journal for professional scientists; the *Monthly* is a nontechnical journal for the intelligent public. The Association also publishes technical symposia and nontechnical books on science that are available for members at prices substantially below those to the public.

Organization and Meetings

The Association was founded in 1848, with an initial membership of 461. Papers in its early programs were classified as either natural philosophy or natural history. Now its work is organized under 16 sections and 190 associated societies having a total membership of over 500,000. Its annual meetings are the greatest regular gatherings of scientists in the world.

Nominations and Applications for Membership

Members may submit nominations for membership at any time, and persons desiring to become members can obtain membership application forms from the Office of the Permanent Secretary, the Smithsonian Institution Building, Washington 25, D. C.

Changes of Address

New addresses for the Association's record and for mailing the journals *Science* and *The Scientific Monthly*, as well as the A.A.A.S. BULLETIN, should be in the Office of the Permanent Secretary, Washington 25, D. C., at least two weeks in advance of the date when the change is to become effective.

Officers of the Association

President, Charles F. Kettering; *Permanent Secretary*, F. R. Moulton; *General Secretary*, Otis W. Caldwell; *Treasurer*, W. E. Wrather.

Executive Committee: Anton J. Carlson, *Chairman*; Roger Adams, Otis W. Caldwell, Arthur H. Compton, Charles F. Kettering, Burton E. Livingston, Kirtley F. Mather, Walter R. Miles, F. R. Moulton, Elvin C. Stakman, and W. E. Wrather.

